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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2008*.
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-15* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

FINAL ACTION

Response to Amendment

1.   The following Office Action is responsive to the amendment and remarks

received on December 22, 2008. Claims 1-15 remain pending.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3.   Claims 1-10 is rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

Regarding claim 1, line 22, "a parameter linked to the respective packets,

defining permissible access to the respective packets, that specifies a slice thickness

progression". Wherein a parameter defines the accessibility of packets is unlikely to be

a parameter specifies a slice thickness progression also. Reference to the amendment

made for claim 11 and for the purpose of this examination, the above quoted claim 1

statement will be interpolated as "a parameter linked to the respective packets, ~~defining~~

~~permissible access to the respective packets,~~ that specifies a slice thickness

progression".

Claims 2-10 are rejected by their dependency.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to be
> patented and the prior art are such that the subject matter as a whole would have been obvious
> at the time the invention was made to a person having ordinary skill in the art to which said
> subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

5.   Claims 1-5, 10-11, 13, and15 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the combination of Gropper et al. (US 2003/0005464 A1), Slack (US

2002/0068863 A1), and Liu (US 6,795,723 B1).

Regarding claim 1, Gropper discloses a medical processing system comprising:

- at least one imaging modality that acquires image data from a subject

representing examination images (as depicted in figure 1A, numeral 120: "…The image

source 102, also referred to as a modality, is a device that captures an image and/or

image related data. For example, the image source 102 can be a computed tomography

("CT") imager, a magnetic resonance ("MR") imager, an ultrasound ("US") imager, an X-

ray imager, a computed radiography ("CR") imager, a digital radiography ("DR") imager,

a secondary capture ("SC") imager (e.g., a 3D reconstruction), a radiograph ("RG")

imager (e.g., radiograph captured by a film digitizer) and the like … If the image source

102 does not generate a digital image, a converter (not shown) is added to the output of

the image source ~~104~~_102_ to generate a digital image file for receipt by the importer 104"

in paragraph 33, line 11);

- for each imaging modality, a computer workstation associated therewith that

processes the image data acquired by the associated imaging modality (as discussed

above "… If the image source 102 does not generate a digital image, a converter (not

shown) is added to the output of the image source ~~104~~_102_ to generate a digital image

file for receipt by the importer 104" in paragraph 33, line 21. It would have been obvious

that the needed converter can be a computer workstation associated with the imaging

modality to perform the digitizing process. See also "yet another embodiment, the

importer module 104 is included in the image source 102" in paragraph 58, line 12.

Thus, the importer can also be a part of the workstation which receives source image

#102);

- a communication network in communication with said computer workstation that

transfers said examination images, after processing in the computer workstation, to

locations remote from said computer workstation (as depicted in figure 1A, numeral 122

is the communication network which connects between #104 and repository #108);

- a storage device in communication with said communication network that stores

said examination images (as depicted in figure 1A, numeral 108);

- at least one further workstation in communication with said communication

network that post-processes the examination images processed in said computer

workstation (as depicted in figure 1A, numeral 116 is another workstation: "The client

device 116 is a computing device that can communicate with the network 114. The

client device 116 can be for example, a personal computer, a general workstation, a

radiology workstation ..." in paragraph 53, line 3);

- a compression device in communication with said computer network that

compresses and organizes the image data representing said examination images and

stores the compressed data in packets, as packetized image data, with a parameter

linked to the respective packets (as depicted in figure 3, numeral 306: "...image coding

processor 306 transforms the medical images using the JPEG 2000 protocol. JPEG

2000 follows a similar progression to any transform technique for image compression" in

paragraph 72, line 6. Some of the salient features offered by the JPEG2000 standard

are: continuous tone (grayscale and color) and bi-level image compression; progressive

transmission by pixel accuracy and resolution; region of interest coding. A color image

may have several components (multi-component) from a specified color space. For

JPEG2000, all the compressed bitstreams (i.e. coded data) from a specific tile, layer,

resolution, component, and precinct are stored in a contiguous segment called a

packet);

     - a decompression device in communication with said communication network

that decompresses the packetized image data packet-by-packet dependent on a

request from said further workstation and dependent on said parameter, to cause a

multi-component image to be generated at said further workstation (as depicted in figure

1A, numerals 116 and 117, "The client device 116 communicates over the network 114

to request a desired image file ..." in paragraph 53, line 13. See also figure 1B,

numerals 116 and 117. "The repository 108 transmits the requested image file or

manifest to the client device 116 for display using the image viewer 117. If an image is

retrieved, the image viewer 117 displays the image ..." in paragraph 54, line 5. Thus,

the decompression device #116 requests compressed JPEG2000 data file through

network and the viewer #117 displays the result. For JPEG2000, all the compressed

bitstreams (i.e. coded data) from a specific tile, layer, resolution, component, and

precinct are stored in a contiguous segment called a packet).

     Gropper discloses a multi-component JPEG2000 data storage and retrieve

system. Gropper does not explicitly disclose the image data can have slice thickness

information. Furthermore, Gropper does not disclose a parameter to select a slice

thickness progression.

Slack, in the same field of endeavor of medical image analysis ("enabling

physicians to select and display diagnostic images from image data acquired with

medical imaging systems" in paragraph 1, line 2), discloses "a method and system for

enabling large amounts of image data to be displayed such that the diagnostician can

easily locate a region of interest in the field of view of the acquired image data and

precisely specify a set of 2D diagnostic images that encompass the region of interest" in

paragraph 5, line 1. As depicted in figure 3, numeral 50 "Exam prescription subsystem

50 is responsible for determining how the patient exam data is acquired. Numerous

parameters are required to specify an acquisition including a sequence of slice

locations, slice thickness, field-of-view …These parameters can be entered explicitly by

the technologist or, more commonly, the parameters are defined by selecting a

particular scan protocol as is well known in the art. Subsystem 50 generates a scan

prescription and the prescription is transmitted to DAS 32 (FIG. 2)" in paragraph 17, line

1. "…data acquisition system (DAS) 32 in control mechanism 26 samples analog data

from detector elements 20 and converts the data to digital signals for subsequent

processing …" in paragraph 14, line 6. Thus, the slice thickness can be chosen as a

parameter variable to determine the medical image.

It would have been obvious at the time the invention was made, that one of

ordinary skill in the art would have been motivated to incorporate the medical

processing system Gropper made with slice thickness information as taught by Slack

such that "the diagnostician can easily locate a region of interest in the field of view of the acquired image data and precisely specify a set of 2D diagnostic images that encompass the region of interest" in paragraph 5, line 3.

The Gropper and Slack combination does not explicitly teach the selection of slice thickness progression is based on a parameter.

Liu, in the field of endeavor of medical image processing ("present invention relates to the art of diagnostic medical imaging. It finds particular application in conjunction with magnetic resonance imaging (MRI) scanners" at column 1, line 11), teaches a methodology to composite sequence of images and suppress slab boundary artifact (SBA). As depicted in figure 1, "… a sequence control circuit or control processor 40 controls the gradient pulse amplifiers 20 and the RF transmitter 24 to produce an MRI pulse sequence that generates encoded MR signals or echoes which are received and sampled by the receiver 30 as raw MR data … image data generated by the reconstruction processor 60 is preferably maintained in a data storage device or memory 70 from which it is selectively accessed and formatted into one or more image representations of the subject …" at column 5, line 16. As shown in figure 3, numeral 120, "… user may specify values for all the parameters or merely selected parameters of particular interest to the user for the results desired …" at column 7, line 40. As illustrated by numeral 170, "… when k_{as} = 1.0 (100% SBA suppression) the slab progression is uniform, i.e., between each successive interleave sampling the slab progresses a distance corresponding to the slice thickness, THK. On the contrary, when k_{as} <1.0 the slab progression is non-uniform, i.e., between each successive interleave

sampling the slab does not always progress a distance corresponding THK. Rather,

depending on the imaging parameters, selected progressions between interleave

samplings correspond to some integer multiple of THK ..." at column 8, line 42.

It would have been obvious at the time the invention was made, that one of

ordinary skill in the art would have been motivated to incorporate the medical

processing system of the Gropper and Slack combination, with slice thickness

progression selection parameter as taught by Liu to "provide for controllable artifact

suppression and flexible MRI parameter selection and allow for an adjustable trade-off

between SBA suppression and scan time efficiency" at Liu column 3, line 6.

Regarding claim 2: - compression device generates further parameters

respectively linked with said packets, in addition to said parameter specifying slice

thickness, selected from the group consisting of a parameter specifying an image

resolution level, a parameter specifying an image quality level, a parameter specifying a

region of interest, and a parameter specifying a component index (as discussed in claim

1 that the slice thickness is one parameter taught by Slack. Furthermore, as discussed

in claim 1 for the compression device that the packet of JPEG2000 contains parameters

such as region of interest, progressive accuracy level, and progressive resolution level

etc.);

- decompression device employs said parameters to generate said multi-

component images with at least one of a progressive image resolution, progressive

image quality levels, and consistent region of interest presentation, respectively (as

discussed in claim 1 for the decompression device that the permissible access to the

respective JPEG2000 packet linking to parameters such as progressive quality level,

progressive resolution level, and region of interest has been defined and verified before

a multi-component image data can be transmitted to the user. Only permissible packets

can be check-out and then displayed by the viewer).

Regarding claim 3, compression device generates supplementary information

and requests and transmits said supplementary information and requests to said further

workstation together with the compressed packetized image data ("The data received

by the importer 104 can include both image and non-image data (e.g., text, patient

information, image parameters and the like). The data can be transmitted and stored i)

in "files", ii) as streamed formats and/or iii) other non-file formats (e.g., DICOM and the

like)" in Gropper paragraph 33, line 3).

Regarding claim 4, said decompression device transmits a total quantity of data

in compressed state, with said parameters, to said further workstation (as discussed in

claim 1, the JPEG2000 parameters are transmitted to further workstation and the total

quantity of data "received by the importer 104 can include both image and non-image

data (e.g., text, patient information, image parameters and the like). The data can be

transmitted ..." in Gropper paragraph 33, line 3).

Regarding claim 5, said compression device transmits an entire file for an image

in compressed state to said further workstation ("The data can be transmitted and

stored i) in "files", ii) as streamed formats and/or iii) other non-file formats (e.g., DICOM

and the like). Accordingly, although the illustrative embodiments deals primarily with

image files, virtually any other data construct may be employed without deviating from

the scope of the invention" in Gropper paragraph 33, line 5).

Regarding claim 10: - further workstation has user rights associated therewith (as

depicted in Gropper figure 1A, numeral 110 "The authorized user 110 is a user who is

authorized to have access to the received image ... The authorization process can be

any accepted authorization, for example, passwords, biometric authentication ..." in

paragraph 36, line 9), and

- wherein said compression device transmits the compressed packetized image

data, or portions thereof, to said further workstation dependent on said user rights

(discussed in claim 1 for the file permissible accessibility).

Regarding claim 11, a method for operating a medical system architecture

comprising the steps of:

- generating raw data of a medical multi-component image using said imaging

modality (discussed in claim 1 for the imaging modality) composed of a plurality of said

examination images (as depicted in Liu figures 2A and 2B);

- compressing said raw data to generate compressed image data (discussed in claim 1 for the compression device);

- organizing and storing said compressed image data in packets and linking a parameter to each packets that specifies a slice thickness progression for that packet (discussed in claim 1, storage device and compression device. See also the claim 1 discussion about parameters and JPEG 2000 packet. Also the concept of slice thickness is taught by Slack and Liu);

- transferring the compressed image data to a decompression location (as depicted in Gropper figure 1A, "user 110 wants to retrieve the image file, or manifest, the authorized user 110 uses the client device 116. The client device 116 is a computing device that can communicate with the network 114 … The client device 116 communicates over the network 114 to request a desired image file or patient study" in Gropper paragraph 53, line 1. See also the claim 1 discussion about the selected parameters);

- at said decompression location, decompressing the compressed image data to form said multi-component image with each examination image therein having a selectively variable slice thickness dependent on said parameter (discussed in claim 1 for the decompression device with parameters and slice thickness as taught by Slack and Liu).

Regarding claim 13, further workstation has user rights associated therewith, and comprising analyzing said parameters to determine whether said decompressed image

data can be presented at said further workstation dependent on said user rights ("... In

one embodiment, the file store provides security by encoding the identifier of the file

prior to indexing in the database store. In another embodiment, the file store includes

coded image files as well as coded lists of image files and associated information

(meta-data) about the image files. In another embodiment, the file store provides

security by encoding the identifier of the meta-data file prior to indexing in the database

store" in Gropper paragraph 13, line 4. See also "...the network server 113 *(figure 1B)*

and/or database 146 can act as the gatekeeper to determine if the user using the client

device 116 to access identifying data for an image or manifest is authorized to do so ..."

in Gropper paragraph 57, line 12).

Regarding claim 15, comprising linking further parameters, in addition to said

parameter that specifies a slice thickness progression, to the packets designating

accessibility to the respective packets, and selecting said further parameters from the

group consisting of a parameter defining progressive image resolution, a parameter

defining progressive image quality levels, a parameter identifying region of interest

consistency (as discussed in claim 1 that the slice thickness is one parameter taught by

Slack and Liu. Furthermore, as discussed in claim 1 for the compression device that

the packet of JPEG2000 contains parameters such as region of interest, progressive

accuracy level, and progressive resolution level etc.).

6.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the

combination of Gropper, Slack, and Liu as applied to claim 1 discussed above, and

further in view of Sirohey et al. (US 2002/0057844 A1).

Regarding claim 6, the Gropper, Slack, and Liu combination teaches a medical

system transmits information to further workstation. The Gropper, Slack, and Liu

combination does not explicitly teach that information is already in further workstation.

Sirohey, in the same field of endeavor of data management ("rapid transmission

of image files and selective handling based on the desired region of interest" in

paragraph 11, line 2), disclosed in figure 27 "process 400 also uses a variety of flags

and identifiers to facilitate tracking of the addressable sub-band data ... these flags and

identifiers may include flags to indicate whether the process 400 has already retrieved

and incorporated specific tessellated blocks, i.e., Sub-Bands(Z, X, Y), or has already

retrieved an entire resolution level into the locally stored image data. For example, a

Boolean flag may be used to indicate the presence or absence of particular block or

level ..." in paragraph 122, line 1.

It would have been obvious at the time the invention was made, that one of

ordinary skill in the art would have been motivated to provide a medical processing

system of the Gropper, Slack, and Liu combination, with the capability to identify

information presence or absence in the further workstation such that only the desired

portion of image will be transmitted and viewed to improve the working efficiency

"Accordingly, a desired region of the image data can be identified and individually

handled for storage, transmission, retrieval, and display" in Sirohey paragraph 12, line

7.

7.   Claims 7-9, 12, and 14 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the combination of Gropper, Slack, and Liu as applied to claims 1

and 11 discussed above, and further in view of Onno et al. (US 2003/0018750 A1).

Regarding claims 7 and 8, the Gropper, Slack, and Liu combination teaches a

medical processing system transmits information to further workstation. The Gropper,

Slack, and Liu combination does not explicitly teach render request and message after

completion.

Onno, in the same field of endeavor of image processing to obtain ("providing a

new method and device for processing an encoded digital signal making it possible to

take into account the constraints and/or requirements specific to a user sending a

request for obtaining a part of the digital signal" in paragraph 17, line 2), discloses that

the user can not only define the area of interest but also "request the resolution ... of the

chosen sub-image" in paragraph 197, line 1, and "the user may furthermore specify the

desired quality in his request" in paragraph 200, line 1. Once the requested sub-image

completed, it will be displayed in figure 12 with the quality bar or quantity bar discussed

in paragraphs 318-320, i.e. after the selected image #220 completed and visualized, the

quality bar rendering a request for the user to make a "selection by the mechanism 210

of a quantity of data chosen by the user will automatically generate a request addressed

to the server ..." in Onno paragraph 323, line 1.

It would have been obvious at the time the invention was made, that one of

ordinary skill in the art would have been motivated to include the medical processing

system of the Gropper, Slack, and Liu combination, with message and render request

capability as taught by Onno, so the user not only "will be able to obtain information

about the resolutions or levels of quality available in the selected sub-image" in Onno

paragraph 372, line 1, but also "respond rapidly to a request for obtaining a sub-image

selected by the user by providing a response to the user" in Onno paragraph 374, line 2.

Regarding claim 9, decompression device generates and transmits a storage

recommendation as said message (as depicted in Onno figure 5, step S10, user "will be

able to obtain information about the resolutions or levels of quality available in the

selected sub-image" in Onno paragraph 372, line 1).

Regarding claim 12, entering requests into said further workstation about specific

parameters associated with said image data in said packets (discussed in claim 1 about

specific parameters such as region of interest, resolution level, and quality level for each

packet and the entering of request is discussed in claim 7).

Regarding claim 14, additionally transmitting supplementary information and

requests from said decompression location to said further workstation ("the user will be

supplied with at least one value indicative of a quantity of information data which has

been determined during the step S5 *(figure 5)*" in Onno paragraph 312, line 3. In the

mean time, "the system can supply the user with the value indicative of the quantity of information data corresponding to the lowest quality layer on the table of FIG. 9 mentioned above, which will enable him to take a decision with respect to the request initially formulated, and possibility to refine it" in Onno paragraph 313, line 1).

Response to Arguments

8.   *Summary of Applicant's Remark:*

The previous USC 112 rejections should be withdrawn in view of the amendment.

Examiner's Response:

Examiner agrees except claims 1-10 are still under USC 112 second paragraph rejection. Refer to the rejections above for further discussion.

9.   *Summary of Applicant's Remarks:*

"There is no possibility disclosed in the Slack reference, however, to include a parameter in the image dataset for a particular image that indicates a slice thickness progression, which is the pre-requisite necessary in order to allow a user to make a selection of slice thickness, when reconstructing an image based on the data in the dataset, with regard to slice thickness" at response page 9, line 11.

Examiner's Response:

Applicant's argument is moot in view of the new grounds of rejection advanced herein above. Specifically, the Liu (US 6,795,723 B1) reference now teaches the concept of slice thickness progression selection parameter. Refer to the rejections above for further discussion.

Conclusion

10.   Applicant's amendment is rejected in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eueng-nan Yeh whose telephone number is 571-270-1586. The examiner can normally be reached on Monday-Friday 8AM-4:30PM EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wenpeng Chen can be reached on 571-272-7431. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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